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ABSTRACT

The effects of a calendar change from the quarter system to the semester system on enrollment patterns, student credit hour productivity, grading patterns, and course completion patterns were investigated. Enrollment and grade pattern data were collected for nine Florida public universities and Iowa State University, for 1980-1982. Additionally, a comprehensive postregistration survey was conducted at a comprehensive state university. An analysis of the average student credit hour load showed a significant reduction at both the upper and graduate levels after conversion to the semester system. A reduction in the course completion rate also occurred under the semester calendar system, along with an increase in the percentage of course withdrawals. Many students, faculty, and administrators reported that the full-time course load under the semester system had been reduced to 12 hours. The perception that a full-time load was based on the number of courses rather than on the number of credit hours was common among University of Central Florida students. While the ideal calendar is open to question, the findings seem to favor shorter terms such as those provided under the quarter system. (SW)

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ACADEMIC CALENDAR CHANGE IMPACT ON ENROLLMENT PATTERNS AND INSTRUCTIONAL OUTCOMES

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This paper was presented at the Twenty-Third Annual Forum of the Association for Institutional Research held at the Sheraton Centre in Toronto, Ontario, May 23-26, 1983. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum papers.

D. R. Coleman, Chairman
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ACADEMIC CALENDAR CHANGE IMPACT
ON ENROLLMENT PATTERNS AND
INSTRUCTIONAL OUTCOMES

Calendar change has been common throughout the history of higher education. Institutions have implemented new calendars to improve the quality of education, the articulation process, the use of physical facilities, the use of student time, the opportunity for faculty development, and the options for scheduling.

Although no calendar is ideal for every purpose, a calendar's usefulness is usually measured by how well the system meets the institution's specific needs. What may be an ideal calendar for a residential, liberal arts institution may be inappropriate for an urban university where 95 per cent of the students commute daily or for a large, land-grant university which meets the diverse needs of many constituencies.

The funding stability of the institution is a paramount consideration that cannot be neglected when considering calendar change. In the past, calendar change studies have addressed costs associated with forms, computer programming, printing, and personnel. Decisions to change the calendar in the next decade must also address other relevant factors such as faculty union contracts, student progress, student scheduling patterns, and clientele served. Both the funding and long-term instructional impact of an academic calendar change must be addressed when considering new calendar options.

In an attempt to develop a common academic calendar for Florida's public postsecondary educational institutions, the State University System

converted to the semester calendar system at the beginning of the Fall term, 1981. Although the semester system was claimed to have numerous financial and educational advantages, the negative impact on enrollment patterns and grading patterns was not anticipated.

Purpose

The purpose of this study was to determine the effects of a calendar change from the quarter system to the semester system on enrollment patterns, student credit hour productivity, grading patterns, and student progress. The specific objectives were:

1. To determine the nature of changes in student loads after converting to the semester calendar.
2. To identify conditions and patterns which occur when institutions change from the quarter to the semester calendar.
3. To determine if faculty grading patterns remained constant after converting from the quarter to the semester calendar.
4. To determine if student course completion rate remained constant after changing from the quarter to the semester system.

Historical Overview

Research on calendar change has been very limited. Most studies have dealt with the number of institutions adopting new calendars or ad hoc committee case studies. Those studies which addressed financial issues only considered costs of insignificant factors.

Calendar change has not been atypical. Smith (1975) reported that between 1969 and 1975, one-half of the nation's colleges and universities

changed calendars. Rosselot, Oleson and Copple (1978) reported that during the eight year period from 1970 through 1978, 2,084 institutions changed calendars.

Individual preference for one calendar type is another factor which compounds the issue. Smith (1975) revealed in a study completed at San Diego Community College that slightly more than 60 percent of the students and staff preferred the semester system, under which they were operating, and 28 percent preferred converting to a quarter system. Rosselot, Oleson and Copple (1978) found that in 1977-78 the early semester and quarter systems were most prevalent. Of the 2,452 institutions participating in their study, 48 percent used the early semester calendar and 23 percent used the quarter calendar. Other forms of the semester system were used by 22 percent of the institutions. Although one cannot identify any trend toward an ideal calendar, institutions have continued to abandon the traditional semester and quarter calendars. Rosselot, Oleson and Copple (1978) reported that during the period from 1975 to 1978 the number of institutions using the quarter system dropped by two percentage points. The early semester calendar and other experimental calendars were the major benefactors of this change.

A national calendar change study by Waltz, Overturf, Frazier, Baker and Copple (1977) identified those factors which influenced calendar preference. They found that removal of the lame duck week in January, administrative efficiency, school vacations, summer and Christmas job accessibility, and articulation considerations were the major factors cited for adopting the early semester calendar. Those converting to the quarter system cited instructional concerns and administrative/faculty considerations as the

primary factor for adopting this calendar. Those converting to the traditional semester system cited student need and curriculum/instructional concerns as the main factors which influenced their decision. The 4-1-4 calendar ranked second only to the early semester calendar in popularity. Institutions converting to the 4-1-4 calendar cited curriculum/instruction concerns, elimination of lame duck weeks, opportunity for creativity and innovation, opportunity for field trips and travel, and opportunity for faculty and students to explore new subject fields as the major factors which influenced their decision.

Johnson (1973) pointed out that institutions undoubtedly undertake calendar change in an attempt to solve problems or gain a significant advantage from the new system. However, Waltz' (1977) finding revealed that curriculum/instruction concerns as a category was cited as a primary factor which influenced conversion to the new calendar and was ranked first by four of the groups.

Methodology

Enrollment and grade pattern data were collected from the nine Florida public universities and Iowa State University for the period 1980-1982. In addition, a comprehensive post-registration survey was conducted at one of the comprehensive State Universities to ferret-out common factors which affected student enrollment and course completion patterns.

It was hypothesized that the semester system would provide numerous financial and educational advantages that were not available under the quarter system. The survey and analysis were designed to address basic

factors which impact the decision-making process in higher education.

A non-parametric chi square analysis, the Friedman's F_r Non-Parametric Test for Randomized Block Design, and the Wilcoxon Signed-Rank Test for a Paired Difference Experiment were used to test the null hypotheses of no difference. Null hypotheses addressed Fall term average course loads, grading patterns, and course completion rates while operating under the two calendar systems.

Presentation of Findings

Average student load is the primary factor which impacts institutional funding and is of major interest to educational administrators. Since most public institutions are funded on an FTE basis, a decrease in average student credit load can have a devastating impact on funding stability. Another factor of major significance to the State, university, and the student includes degree progress. When substantial variations in grading patterns and completion rates occur, both the amount of State funds required to generate the desired manpower and the length of time required to complete a degree will invariably increase. These data revealed interesting findings which impact institutional funding and student progress.

A randomized block experiment with three treatments (years) and matched experimental units (universities) was used to test null hypotheses associated with average student credit hour load among institutions. The number of hours per course changed under the two calendar systems. Since this change could have affected the variability of the student credit hour load, the usual parametric or normal assumption approach to randomized block experiments was judged inappropriate. Therefore, the less powerful non-parametric

Friedman F_r Test was used to test the null hypotheses of no difference. This test was performed using the following formula:

$$F_r = \frac{12}{bk(k+1)} \sum_{j=1}^{k} (R_j)^2 - 3b(k+1)$$

where b = number of blocks (institutions)
k = number of treatments (years)
R_j = sum of ranks in jth column

$\sum_{j=1}^{k}$ directs one to sum the squares of the sums of ranks over all k

When differences were detected by the Friedman F_r Test, the non-parametric Wilcoxon Signed-Rank Test for a Paired Difference Experiment was used to detect which years accounted for these differences.

Table 1 provides a summary of the average freshmen/sophomore student credit hour load by institution and year. Only six of the institutions had freshmen and sophomore students during Fall 1980. The analysis of the

Table 1

Summary of Average Freshmen/Sophomore Student Credit Hour Load By Institution and Year

Institution	Average Credit Hour Load		
	1980	1981	1982
A	14.2	13.4	14.1
B	13.1	13.2	13.5
C	12.4	11.8	12.3
D	14.1	13.3	13.3
E	13.3	12.8	12.6
F	15.2	15.3	15.3

freshmen/sophomore average load data revealed only minor variation in the average student credit hour load for the three years. Using the randomized block analysis, the null hypothesis of no difference was not rejected at the .05 level of significance. Therefore, there was insufficient evidence to indicate that the conversion from a quarter to a semester system had an impact on student credit hour load for freshmen and sophomore students, and one could conclude that conversion to the semester system had a minimal, if any, impact on the student credit hour load at the lower division level.

Table 2 provides a summary of the average junior/senior student credit hour load data by institution and year. An analysis of these data revealed that the average student credit hour load was greater under the quarter

Table 2

Summary of Average Junior/Senior Student Credit Hour Load Data By Institution and Year

Institution	Average Credit Hour Load		
	1980	1981	1982
A	13.9	13.7	13.3
B	13.0	12.9	12.8
C	11.9	10.8	10.8
D	13.7	12.9	12.9
E	12.0	11.4	11.3
F	15.3	14.9	14.9
G	11.4	10.3	9.9
H	11.3	9.3	9.1
I	10.5	8.6	8.4
J	12.4	10.4	10.5

system than the semester system for each institution. The null hypothesis of no difference in average student credit hour load was rejected at the .005 level of significance using the randomized block design. Further analyses between paired treatments (years) using the Wilcoxon Signed-Rank Test for a Paired Difference Experiment were completed to determine which years accounted for the difference. The null hypotheses of no difference between Fall 1980 average student credit hour load and the corresponding Fall 1981 and 1982 figures were both rejected at the .005 level of significance. The average delta revealed a decrease of 1.12 hours in 1981 and 1.15 hours in 1982. The null hypothesis of no difference between Fall 1981 and Fall 1982 average load was not rejected at the .05 level of significance. A comparison of the average delta revealed a decrease of .03 hours for these two terms. A comparison of the average student load on an institutional basis for the Fall 1981 and Fall 1982 distributions revealed only minor fluctuations.

Table 3 provides a summary of the average graduate student credit hour load by institution and year. An analysis of these data revealed that the average student credit hour load for Fall 1980, when the quarter system was in effect, was higher than the corresponding semester average student credit hour load at eight of the ten institutions. The null hypothesis of no difference in the average student credit hour load was rejected at the .05 level of significance using the randomized block design. Further analyses were completed on the average load for the individual years using the Wilcoxon Signed-Rank Test for a Paired Difference Experiment. The null hypotheses of no difference between Fall 1980 average graduate student

Table 3

Summary of Average Graduate Student Credit Hour

Load Data By Institution and Year

Institution	Average Credit Hour Load		
	Fall 1980	Fall 1981	Fall 1982
A	7.1	8.5	8.1
B	6.9	5.3	5.2
C	7.4	5.7	5.7
D	11.1	10.9	10.7
E	5.9	5.2	5.3
F	11.7	11.0	10.9
G	7.2	5.5	5.3
H	6.6	6.3	6.3
I	7.7	6.5	6.3
J	7.6	7.8	8.0

credit hour load and the corresponding 1981 and 1982 terms were both rejected at the .05 level of significance. A comparison of the average delta for the corresponding terms revealed a decrease of .65 hours in 1981 and a decrease of .72 hours in Fall 1982. The null hypothesis of no difference between the average student credit hour load for Fall 1981 and Fall 1982 was not rejected at the .05 level of significance. Further, the average delta revealed a minor decrease of .07 hours. A comparison of the average load by institution for the two terms in which the semester system was in operation revealed only minor fluctuations.

Table 4 provides a summary of the percent of grades awarded by year, category, and institution. Since one of the institutions implemented a major change in their grade categories, this analysis only included data from nine institutions. The Friedman's F_r Non-Parametric Test for Randomized

Table 4

Percentage Grade Distribution By Year,

Category, and Institution

Term/Grade Category	Institution								
	A	B	C	D	E	G	H	I	J
Fall 1980									
A-C	64.5	85.3	80.4	81.4	80.2	82.6	85.7	81.5	81.5
D	8.8	7.3	6.5	6.6	6.1	4.0	5.1	4.3	4.2
F	8.9	5.7	5.9	3.0	6.0	4.1	8.3	5.4	4.4
W	17.8	1.7	7.2	9.0	7.7	9.3	.9	8.8	10.0
Fall 1981									
A-C	66.0	83.1	76.2	78.5	77.1	83.8	80.6	78.9	80.6
D	8.0	7.6	7.0	6.9	6.2	4.6	6.2	3.3	3.9
F	8.1	6.8	6.0	3.6	6.4	6.0	12.2	5.9	3.0
W	17.9	2.5	10.8	11.0	10.3	5.6	1.0	11.9	12.5
Fall 1982									
A-C	67.3	85.2	78.0	80.0	78.9	83.8	83.1	79.6	83.3
D	7.0	6.8	6.6	6.9	6.1	5.0	6.5	3.9	3.2
F	6.5	5.7	5.6	3.4	5.8	5.9	8.9	6.2	2.9
W	19.2	2.3	9.8	9.7	9.2	5.3	1.5	10.3	10.6

Block Experiments was deemed most appropriate for testing null hypotheses which addressed grade pattern changes present at all universities. This test allowed for simultaneous consideration of all universities as "blocks" with the three years of consideration as "treatments" and, hence, examined each grade category for significant year-to-year changes. A significant difference discovered by this analysis test was followed by a Wilcoxon Signed-Rank Test for a Paired Difference to determine precisely which pairs of years accounted for the difference.

The null hypotheses of no difference in grading patterns associated with the "F" and "D" grade distributions were not rejected at the .05 level of significance. A comparison of the respective percentage distributions revealed minor changes in both directions during the three year period. While at one institution, the percentage of "F's" and "D's" increased, at another institution they decreased.

The null hypothesis of no difference associated with the "W" grade distributions was rejected at the .01 level of significance. Of the nine institutions included in this analyses, only one institution experienced a decrease in the percentage of "W's" awarded. The corresponding analyses used to determine if year-to-year changes were significant were tested with the Wilcoxon Signed-Rank Test for a Paired Difference Experiment. The null hypothesis of no difference between the Fall 1980 and Fall 1981 "W" grade distributions was rejected at the .05 level of significance. The corresponding null hypothesis of no difference for Fall 1980 and Fall 1982 was also rejected at the .05 level of significance. The null hypothesis of no difference between the Fall 1981 and Fall 1982 "W" grade distribution, in which the semester system was in effect, was not rejected at the .05 level of significance. However, there was a slight decrease in the percentage of "W's" awarded during Fall 1982. A comparison of the individual year-to-year percentage "W" grade distributions revealed a substantial increase in the percentage of "W's" awarded under the semester calendar system. There was an increase in the percentage of "W's" awarded under the semester calendar system at eight of the nine institutions included in this analysis. In general, one would conclude that when an institution converts from the

quarter to the semester calendar system, the proportion of students that successfully complete the required course work would decrease.

A comprehensive post-registration survey was conducted at the University of Central Florida to investigate student attitudes which had an impact on enrollment patterns. The findings revealed interesting nuances which helped explain enrollment patterns and future enrollment plans under the semester system. In general, a substantial number of students, faculty and administrators believed that the full-time course load under the semester system had been reduced to 12 hours. Three institutional representatives reported no perceived change.

Table 5 provides a summary of the course load students were advised to take, wanted to take, and planned to take. An analyses of these data revealed

Table 5

University of Central Florida

Summary of Student Course Load By Category

1981-82

Credit Hour Load	Percent of Students			
	Advised* To Take	Wanted To Take	Fall 1981 Actual Loads	Spring 1982 Planned Credit Load
11 or Less	8.0%	12.8%	23.2%	12.5%
12	42.9	35.3	35.4	31.7
13	8.0	9.2	11.1	3.4
14	7.6	5.3	8.2	4.8
15	21.2	23.9	14.2	37.4
16 or More	12.3	13.5	7.9	10.2

*Approximately 56 percent of the students participated in faculty or peer advisement process.

that 42.9% of the students were advised to take 12 semester hours, 36.8% were advised to take from 13 through 15 semester hours, and only 12.3% were advised to take 16 semester hours or more. In general, students actually enrolled for fewer hours than they were advised to take. A comparison of the Fall 1981 average student load and the planned Spring term student load figures revealed that students planned to increase their credit hour load during the Spring term. However, the actual Spring 1982 average student credit hour load was somewhat less than the Fall average student credit hour load. These findings were also consistent with the average student credit hour load reported for Fall 1982. In eight of the ten institutions participating in the study, a slight decrease in the upper level student credit hour load was observed for Fall 1982 over the previous Fall semester.

It is common for the number of credit hours awarded per course to change from four quarter hours to three semester hours during a calendar conversion. To determine if this change had an impact on student course loads, students were asked how many four hour courses under the quarter system and how many three hour courses under the semester system would be a full-time load.

Table 6 provides a summary of the students' perception of a full-time course load. These findings imply that many students perceived a full-time load to be based on the number of courses rather than the number of credit hours. In general, students perceived four courses as the full-time load regardless of the number of credit hours per course. This finding helped explain the reduction in average student credit hour loads experienced at the upper level under the semester system.

Table 6

Summary of Student Perceptions of Full-Time

Load By Number of Courses and System

Number of Courses	Quarter System Percent Citing Number of 4 Hour Courses	Semester System Percent Citing Number of 3 Hour Courses
1	.3%	.2%
2	3.1	1.9
3	37.0	8.5
4	57.3	50.8
5	2.3	37.6
6	0.0	1.0

Summary and Conclusions

The findings of this study revealed that converting from the quarter to the semester system had an impact on average student course load and grading patterns. An analysis of the average student credit hour load showed a significant reduction at both the upper and graduate levels after conversion to the semester system. A comparison of the quarter and semester grade distributions revealed a reduction in the course completion rate. Although minor changes were observed in the "F" and "D" distributions, there was a significant increase in the percentage of "W's" awarded under the semester calendar system.

Many students, faculty, and administrators reported that the full-time course load under the semester system had been reduced to 12 hours. The perception that a full-time load was based on the number of courses rather than the number of credit hours was common among University of Central

Florida students.

Since State funding in public education is usually based on FTE enrollment, the reduction in average student credit hour load had a devastating impact on the revenue provided to the university. The increased percentage of "W's" awarded under the semester system reduces the rate at which students are progressing toward their degree and, therefore, reduces the available manpower pool of college graduates. Although the FTE enrollment of the university can be adjusted by allowing more students to enroll, the potential inefficiency in terms of student progress may be detrimental to the students, the state, and society.

If institutions are to effectively serve the public, future calendar change proposals should consider the impact on funding stability and instructional outcome. While the ideal calendar may not yet have been identified, the results of this study seem clearly to favor shorter terms such as those provided under the quarter system.

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